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of the Medulla oblongata in
its relations with sexual
order



THE MEDULLA OBLONGATA IN ITS RELATIONS
WITH SEXUAL DISORDER, AND ON LOCAL
BLOOD-LETTING AS A MEANS OF TREATMENT.

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THE medulla oblongata, which forms the bond of union between the brain and spinal marrow, has been called by Flourens and his school the nodus vitæ, the middle point, or the centre of the nervous system,¹ the "central nervous system" described by Michael Foster "as that as yet almost unknown territory."² Treating of its general anatomy, Erb asserts that "many points, and these perhaps the most important, are still unsettled; of its internal structure very little is known with certainty and accepted by all, and the few facts of this nature may be well described as landmarks in an unknown region."³

The physiology of the medulla oblongata is just as imperfect and obscure as its anatomy, so that we have not become possessed of any undisputed information on the most elementary and important facts; we know nothing, for instance, of the conduction of sensory impressions, or of the exact position of the chief centres.⁴

At birth, the medulla oblongata is in a much more advanced state of development than the brain; according to Virchow, quoted by Charcot,⁵ "the life of the nervous system in the

¹ Van der Kolk, *On the Medulla Oblongata*, p. 87.

² Michael Foster, "Address on Physiology," *British Medical Journal*, vol. ii. 1880, p. 285.

³ Erb, "On Medulla Oblongata," *Ziemssen*, vol. xiii. pp. 825-832.

⁴ *Op. cit.* p. 852.

Charcot, "Localisation of Cerebral and Spinal Diseases," p. 160.

newly-born child is almost exclusively centred in the medulla oblongata and spinal cord, and the child is only capable of instinctive acts of reflex character ; suction, for example, is totally independent of the will, the volitional centres being then undeveloped. Further, in a lecture delivered before the New York Medical Society, Hammond insists that the seat of instinct is exclusively in the medulla oblongata, its influence being best evidenced in the functions of nutrition and reproduction, the preservation and continuation of the species. In support of his thesis Hammond quotes the case reported by St Hilaire, of an acephalous monster that sucked, cried, and opened and shut its eyes.”¹

A similar case of arrested development occurred within my own experience in 1875. This child survived for seventeen hours, and, in the absence of the cerebral hemispheres, cried, and swallowed with ease, but, for obvious reasons, was not applied to the mother's breast ; both feet were clubbed, toes of right foot absent, toes of left foot distorted, fingers of left hand webbed, fingers of right hand almost deligated. We know that frogs whose cerebral hemispheres have been removed will execute swimming motions when placed in water or in the prone position, and will croak when stroked on the flank ; but if the medulla be removed, leaving only the cord, they execute none of these movements, showing that the sense of instinct so strong in the frog lies in the medulla oblongata. The sexual function in the infant is only in the nascent state, and, according to Foster, whatever the nascent period, each centre requires external stimuli to develop its structural potentialities.² In the words of Dr. Parsons, in the discussion on Hammond's paper, “The sexual instinct does not exist in the fœtus or in the earlier years of infancy, but, as soon as the ovaries or testes begin to develop reproductive functions, the higher centres, which had only hitherto possessed the sexual instinct in potentiality, begin to exercise the functions or to develop the force in reality ; but as soon as the reproductive or co-ordinating instinct was developed in the higher centres, these higher centres also became the originators of the force. The sexual instinct has its origin,

¹ *Journal of Nervous and Mental Disease*, New York, January, 1883, p. 67.

² Foster's *Text-Book of Physiology*.

not alone in the nerve centres or in the reproductive organs, but in both of them.”¹

While the existence of centres in the medulla oblongata for reflex functions, for cardio-inhibitory, for respiratory, for convulsive and other centres, is universally recognised, their relative positions are but matters of conjecture. They have no lines of demarcation ; on the contrary, they often meet at many points, and, so to speak, overlap one another. It is thus that the normal expiratory division of the respiratory centre is connected by the closest ties with the convulsive centre. Although its existence has not so far been demonstrated, I am satisfied that a centre for the genital or reproductive functions may logically be inferred to exist in the medulla oblongata. On this point Van der Kolk writes : “ The close relation between the medulla oblongata and the action of the genital organs is generally received by physiologists. Let it suffice to call to mind the occurrence of erection and emission in persons hanged, how the sexual action is exalted in idiopathic mania with irritation of the brain and medulla oblongata, how frequently after injuries of this part erection and emission, or perhaps impotence, is observed.” Killian succeeded in exciting movements in the uterus or tubes of pregnant guinea-pigs by irritating the medulla oblongata ; and Eckard has shown that galvanic stimulation of the crura and medulla oblongata in the dog will produce erection, although a similar stimulation of the cerebellum produced no such effect ; in rabbits² also like effects were produced by electrical stimulation of the pons. The pathology of the medulla oblongata, according to Erb, is still in an undeveloped state³ and of very varied character ; thus it is subject to the hyperæmias and capillary dilatations of the encephalon, and to the degenerations, primary and secondary, which prevail in the cord. Besides diseases due to organic lesions, many symptomatic forms of disease owe their origin to a morbidly elevated sensibility and irritability of this portion of the neuro-axis, although the primary irritation may often be remote, and have its starting-point in the digestive or generative organs. It is thus that convulsive dis-

¹ *Op. cit.* p. 69.

² Van der Kolk, *On Medulla Oblongata*, p. 268.

³ Erb, “ Diseases of the Medulla Oblongata,” *Ziemssen*, vol. xiii. p. 863.

orders such as epilepsy arise, requiring only increased excitability or congestion of the medulla and the peripheral stimulus transmitted from a spinal nerve, from the vagus, or the sympathetic, to initiate a fit. That the proximate cause of epileptic convulsions lies in the pons and medulla oblongata has been abundantly established by "Van der Kolk, Kussmaul and Tenner, Brown-Séquard and Schiff, Reynolds and Eccheveria."¹

In the etiology of epilepsy and a large class of allied neuroses and neuropathic disorders, sexual excesses hold a prominent place, and that they stand in causal relation to many spinal diseases is attested by Romberg, Nasse, Hammond, Salmon, Rosenthal, and Erb.² Thus hystero-epilepsy, hysteria, chorea, tabes, neuralgia, chlorosis, leucorrhœa and dysmenorrhœa, spinal irritation, neurasthenia spinalis, abnormal seminal losses with their attendants, onanism and masturbation, may be classified as belonging to the neuropathic constitution; and of this condition Erb thus expresses himself:³—"The profound influences exerted upon the nervous system by the genital organs before and after puberty, the great revolution that is effected in the entire organism owing to the awakening of the sexual activity, the extreme irritation of the nervous system from overpowering desire, and the exhaustion from over-frequent or unnatural gratification, are only too fruitful causes of those changes in the nutrition of the nervous system which occasion the neuropathic constitution."

The saying of the older observers that "*coitum parvam esse epilepsiam*" contains a certain amount of truth; almost every fit of epilepsy terminates with seminal emission, and Nothnagel asserts that it is known that in some individuals the first coitus provokes a seizure, which is subsequently repeated every time; the attacks are not unfrequently excited from the direction of the genitals; some women are subject to them quite regularly at the period of menstruation; and I have observed them especially in young girls when the disease declared itself at the same time with the development of puberty."⁴

¹ Nothnagel, "Epilepsy," *Ziemssen's Cyclopadia*, vol. xiv. p. 262.

² Erb, "Diseases of the Spinal Cord," *Ziemssen*, vol. xiii. p. 148.

³ Erb, "Neuralgia in General," *Ziemssen*, vol. xi. p. 25.

⁴ Nothnagel, "Epilepsy," *Ziemssen*, vol. xiv. p. 212.

I have at present under my care two female epileptics who attribute the cause of the attack to the early and continued practice of onanism ; and the case of a former epileptic patient now in the Belfast District Lunatic Asylum is remarkable in this, that his wife informed me lately that he had not approached her for many years except immediately after the cessation of a convulsive fit.

Closely allied to epilepsy, which they very much resemble in their pathological and etiological relations, stand hystero-epilepsy, and hysteria ; the epileptic fit and hysterical seizure have much in common, and frequently cannot be satisfactorily differentiated ; the same exciting condition in the brain, according to Jolly, evidently constituting the basis of severe hysterical as of epileptic fits.¹ And although few will accept in its entirety the axiom of Romberg, that "hysteria is a reflex neurosis caused by genital excitement," yet writers such as Jolly include that item in the list of its ordinary causal factors, and refer many attacks besides to uterine displacement and to ovarian troubles ; the liability to hysterical seizure at the catamenial period ; the bilateral nature of the spasms, so like the crossed or bilateral convulsions of epilepsy ; the globus hystericus, which proceeds from the accessory or vagus, imply an irritated condition of the medulla oblongata. Even in the ordinary remedies for both disorders a perfect analogy subsists ; the controlling power of cold affusion on the face, shortening the fits by its action on the second and third branches of the trigeminus, through its reflex action on the medulla oblongata, and that remedy so salutary in the case of epilepsy, viz. bromide of potassium, possessing a quieting effect also in hysterical manifestations, through its therapeutic action on the medulla and other nerve centres, as it contracts, according to Brown-Séguard, the blood-vessels of the neuro-axis through the vaso-motor nerves, and thus diminishes reflex excitability.

Passing over for the present the other items in the neuropathic group, I think it will not be difficult to demonstrate the existence of a mutual causal relation between a congested condition of the medulla oblongata and that disease denominated "neurasthenia spinalis," and also that of "abnormal seminal losses." To demonstrate on the cadaver the correctness of this statement would be

¹ Jolly, "Hysteria," *Ziemssen*, vol. xiv. p. 532.

rather difficult, if not impossible, as no one dies directly from the effects of either, and the hyperæmias and congestions of the bulb are often of a transitory nature, and do not always present a perfectly satisfactory autopsy; but reasoning from analogy, and taking into account the nature of the macroscopic appearances frequently presented in a disease in the same category, viz. epilepsy, which almost always is allied with, and frequently caused by sexual excesses, we may fairly assume, along with congestion of the medulla common to both during life, the co-existence in its structure of the histological changes found in fatal cases of epilepsy. For example, in a post-mortem on a case of epilepsy recently reported, Dr. Kingsbury found an increase in the cells of the neuroglia of the medulla oblongata through its entire substance, blood-vessels dilated, and the outer walls infiltrated with cellular elements; the ganglion cells swollen and granular, filling up the periganglionic space in the ganglionic tracts, and posterior region of the pons and medulla. This patient died in the Philadelphia Hospital.¹

But although failing of necessity in cadaveric demonstration we may still appeal to the results of clinical observation to a pathology founded on the patent phenomena of the disease, and to a plan of treatment in accordance with the pathological view, and withal eminently successful. That this mutual causal relation is in operation we may satisfy ourselves by reviewing the order observed in the development of the phenomena under consideration: how at one time the lower sexual centre situated in the lumbar plexus, stimulated by peripheral irritation of the organs, reacts upon the higher centre in the medulla oblongata; at another the higher centre originates the force and evokes the functions of the lower centre, which in their turn, often independently of the will and while the patient sleeps, (or in those passive diurnal involuntary emissions beyond the control of the sufferer,) are in over frequent activity, in the neuropathic constitution. There is thus established a vicious circle of cause and effect, the repeated excitement of the medulla through too frequent irritation of the peripheral ends of the sensory spinal nerves, or by excessive sexual gratification, induces a state of chronic congestion in the organ whose function is to receive these impressions,—the medulla

¹ See *Journal of Nervous and Mental Disease*, New York, January, 1883.

itself; and the overcharged organ, yielding to abnormally slight impulses, mental or otherwise, so to speak, explodes and causes in the genital organs the evolution of the ordinary phase of the sexual orgasm. It is thus, too, that nocturnal emissions are so readily induced by lying on the back; the already hyperæmic condition of the bulb is increased by an additional afflux of blood due to gravitation in the supine position; the ganglia, so numerous in the medulla, thus excited to action, discharge themselves upon the lower centres, which react on the generative organs, and thus these involuntary discharges take place.

To the scientific student the recognition of pathological truths is in itself sufficiently attractive, but to the practical physician their interest lies not in their abstract nature alone, but principally in their successful application to the cure of disease. As my note-book is replete with examples of neuro-pathic ailments successfully treated on the lines developed in the foregoing part of the paper, I shall select a few typical cases in illustration.

“NEURASTHENIA SPINALIS.”

CASE I.—Early in the present year I was consulted by a gentleman from a distant university city, who had been suffering for the two previous years, and had been ineffectually treated by men of eminence. He was in a most abject condition, physically and mentally; he suffered from great despondency and timidity, from vertigo, loss of memory and defective vision, affection of speech, shortness of breath, palpitation of the heart, coldness of hands and feet, great weakness in arms and legs, and unsteady gait. He slept badly, had to abandon reading (as it pained him to fix his attention on any given subject), as well as all his professional duties; he complained of severe pain at the poll shooting down the neck; while attempting to describe his symptoms profuse perspiration in large drops broke out over his face and forehead, he startled at the smallest noise, became nervous at the presence of a female, and this or any ordinary excitement made his heart palpitate and an emissio seminis to take place independent of his will; he admitted that his ailments commenced by the practice of masturbation some years previously,

which were kept up by excessive study; besides the diurnal he suffered from very frequent nocturnal emissions, and these were always succeeded on the next day by racking pains in the head and increased debility. The treatment was simple; at his next visit I applied cupping glasses, wet, to the nape of the neck close to the occiput, abstracting about two ounces of blood. The effect was marvellous; while the blood was flowing he exclaimed that he was wonderfully relieved, that his sight had improved, that his brain depression had nearly departed, that he felt his spirits and mental powers return, and a complete change in his nervous system. He slept well the following night, and had no return of the emissions, his appetite was restored, and a natural feeling of vigour began to appear in his limbs; I now advised the application, three times daily, of a cold douche to the nape of the neck, and permitted him to read for ten minutes at a time. A week later on I found him walking about, his cheerfulness had returned, and he expressed himself most grateful for the improvement. Suffice it to say that, at the end of the fourth week, all his distressing symptoms had departed, and he left town to resume his ordinary duties in the class-room, restored in mind and body. As a matter of prudence, I advised moderation in study, the continuance of the cold douche, and the use of bromide of potassium and belladonna in regulated doses.

CASE II.—Some twelve months since a very pale and attenuated gentleman consulted me for a complication of evils; his manner was highly excited and hysterical, his avocations required great mental application and strain, and the effect of these upon his nervous system, with the commission of the practice of masturbation for a number of years previously, had reduced him to a state of despondency which was maintained by daily and nightly erections and emissions which made his life miserable. The irritability had extended to the bladder, so much so that he could not be absent from home for more than half an hour at a time—the calls were so frequent. His nights were most painful, as he had occasion to rise every hour or so to urinate, and each occasion was accompanied or followed by a semi-erection and an emission; his disgust was such that he remained awake the greater part of the night, if possible to

prevent the attacks, and only got a few hours of broken sleep towards morning, when he awoke unrefreshed. He had tried many physicians without effect. I advised the application of the wet pack over the pubic region for the irritable bladder, and, anæmic as he was, I cupped him over the nape, being only able to obtain a small quantity of blood, yet the effect was instantaneous; he was most eloquent in expressing his feeling of relief. His general health speedily improved, he increased many pounds in weight, and for three months had not a single return of the enemy. He then returned to severe study and irregular meals, and had a slight recurrence of the attack; but a second cupping quite restored his equanimity. He wrote to me from England lately, rejoicing in the complete restoration of mental and bodily health.

CASE III. *Abnormal Seminal Losses*.—A writing clerk had been under my care at intervals for about two years for dyspepsia and delicate lungs, with hæmoptysis, night sweats, wasting of the body, restless nights, and nervous debility of hands and feet. On June 23rd, 1868, he informed me that he had up till then concealed from me the fact that he had formerly been addicted to masturbation, and that for the previous three years he was afflicted with nocturnal emissions, occurring generally every alternate night, with an occasional interval of a week, only to recur again, and that the attack was generally ushered in by a feeling of fulness and severe pain at the occiput. The feeling of distress at night was so great that he often feared to lie down, and frequently spent the time walking up and down his chamber till morning. He was induced to unburden his mind by the occurrence of a sudden and severe pain, which began at the nape of the neck, shot down the spine and through both legs, leaving him almost paralysed: he at present suffers much pain and nervous excitement at the lower end of the sacrum and loins. June 24th, I cupped him to-day in the nape of the neck, taking away about two ounces of blood: during the operation he informed me that already he had experienced great relief from the confusion and headache, and that he felt confident of complete cure. June 29th, he stated that he had slept well every night since the cupping was applied, headache much relieved, starting and uneasiness of hands and feet much

diminished : prescribed a mixture of belladonna and bromide of potassium. July 4th, fancied on awaking that he had during the night a slight emission. July 7th, the uneasiness in hands and feet quite gone, spirits much improved, regaining flesh rapidly, chest much better ; no return of hæmoptysis. His cure was now complete, and there afterwards appeared in his case what I have often since observed under similar circumstances—a growth of strong hair, commencing at the poll and proceeding down the neck. The progress of the case was so satisfactory that, after the lapse of a couple of years, acting on my advice, he married : and, in the ordinary course, his wife bore him several fine children.

It is needless to multiply examples ; my case-book contains many as striking as those adduced, differing from one another in some minor circumstances, but all agreeing in the fact of immediate relief by the same simple agency, in the failure of other remedies. In milder cases I rely very much on the effects of bromide of potassium and the extract of belladonna, with cold douches to the nape ; before proceeding to wet cupping, which in every case is not convenient to adopt, I try the effects of dry cupping, frequently repeated, or of a blister “*nuchæ collis.*”

The salutary influence of this topical remedy was also evidenced in a striking manner, in the restoration of the power of the will in several cases where the victim of spermatorrhœa was also a masturbator ; it was one of the results for which the patient was most grateful, being thus enabled successfully to resist the odious temptation. This controlling power was established, too, from an unexpected quarter, for, in several cases of epileptic convulsion in females due to onanism practised for many years, the effect of the cupping, while acting as a curative on the principal malady, had simultaneously imparted the long lost power of self-restraint to the poor invalid. The natural inference from the success of this plan of treatment, is that masturbation or onanism is not in itself merely a symptom but a distinct form of disease and amenable to treatment on proper principles. On this subject we may quote the testimony of Van der Kolk : “Onanism is commonly considered, and often correctly, to be a cause of epilepsy, but onanism and excitement of the sexual organs are, to a greater degree than is usually supposed, the

result of irritation and congestion of the medulla oblongata.”¹ And further on, “although we have seen that onanism is often the result of congestion and irritation of the medulla oblongata, this does not prevent its reacting most unfavourably on epilepsy, and, so long as it continues, rendering the disease wholly incurable; what I have stated holds good with respect to both sexes, for even among females this vice is not so rare as is supposed.”¹

The ordinary treatment of this neurosis is governed by two main ideas, the first aims at ease by invoking the aid of the moral sentiments and the centres of volition in the cerebrum, the other relies on remedies mechanical or otherwise in the direction of the peripheral nerves and the secretory and excretory organs of generation themselves.

The advocates of the first plan advise the sufferer to give up the habit of masturbation, to be cheerful, take plenty of exercise, lie on a hard bed, to apply cold water to the genitals, and other hygienic plans; in the first place, the local application of cold acts not as a sedative, but as an excitant, but how is the influence of the will to be invoked in sleep, when consciousness is in abeyance and sexual instinct in the ascendant; or what controlling power is centred in the will, sufficient to prevent those diurnal pollutions perfectly automatic in their nature for the most part and in direct opposition to the enfeebled will of the sufferer, who so much in this respect resembles the insane, and however anxious to give up the loathsome habit, yet is dominated by a morbid impulse whose nature he fully recognises, and deplores his inability to resist.

The followers of Lallemand, the votaries of local and mechanical surgical treatment, equally misled by a false pathology, have committed most egregious errors in the name of science; that otherwise able man was too much influenced by local considerations, causing him often to ignore general conditions of great importance, and to rely solely on local and mechanical treatment; for, having in one instance discovered by post-mortem examination the existence of a chronic inflammatory state of the neck of the bladder and mucous membrane adjoining the orifices of the ejaculatory ducts he imagined that he

¹ Van der Kolk, *On Medulla Oblongata*, pp. 268 and 276.

recognised this pathological condition in every case, and therefore usually employed the one-sided treatment, viz., cauterisation of the caput gallinaginis :¹ this plan of treatment, however suitable for the cure of prostatic discharge or that from Cowper's glands was quite useless in the treatment of seminal emissions. Lallemand blundered in mistaking an outpost for the citadel, and in expending all the resources of his art upon the periphery rather than the higher centres, the head-quarters of the sexual system. Equally objectionable, or even more so, are those later expedients, the constant use of the urethral bougie, the ligature of the spermatic arteries, and the indefensible operation of castration as performed in America. This heroic procedure has had its counterpart in the abominable mutilation, the actual cautery, and the clitoridectomy of poor women afflicted with aggravated attacks of hysteria; these import into civilised life the barbarities of Abyssinian savages, in the vain hope, by destroying the passive exponent of excitement in the higher centres, to stifle the sexual instinct at its source.

¹ Curshman, *Ziemssen*, vol. viii. p. 843.

